WHAT IS CLAIMED IS:

1. A film-deposition apparatus comprising:

a) a deposition chamber having a substrate-coating region and an electrode-cleaning region, wherein a first gaseous atmosphere can be established in the substrate-coating region while a second gaseous atmosphere can be established in the electrode-cleaning region;

b) a rotatable electrode positioned in the deposition chamber and having an interior cavity; and

c) first and second magnet systems disposed in said interior cavity.

2. The apparatus of claim 1 wherein a substrate in the substrate-coating region has a first major surface oriented away from the rotatable electrode, and wherein operation of the film-deposition apparatus coats said first major surface of the substrate.

3. The apparatus of claim 2 wherein the substrate is a glass sheet.

4. The apparatus of claim 1 wherein the rotatable electrode has an outer surface that is sputtered clean of unwanted contamination in the electrode-cleaning region.

5. The apparatus of claim 1 wherein the first magnet system is oriented toward the substrate-coating region and the second magnet system is oriented toward the electrode-cleaning region.

6. The apparatus of claim 1 wherein the substrate-coating region contains said first gaseous atmosphere and the electrode-cleaning region contains said second gaseous atmosphere.

7. The apparatus of claim 6 wherein the electrode is exposed to both the first and second gaseous atmospheres.

8. The apparatus of claim 6 wherein the first magnet system is adapted to create a first plasma confinement in the first gaseous atmosphere and the second magnet system is adapted to create a second plasma confinement in the second gaseous atmosphere.

9. The apparatus of claim 8 wherein the first gaseous atmosphere comprises a precursor gas and the second gaseous atmosphere comprises a sputtering gas.

10. The apparatus of claim 9 wherein the sputtering gas is inert gas.

11. The apparatus of claim 9 wherein the precursor gas is chemically reacted and/or decomposed in the first plasma confinement such that coating is formed on a substrate that is exposed to the chemically-reacting and/or decomposing precursor gas in the first plasma confinement.

12. The apparatus of claim 11 wherein the substrate has a first major surface oriented away from the rotatable electrode, and the first major surface receives said coating.

13. The apparatus of claim 12 wherein the substrate has a second major surface oriented toward the rotatable electrode, and the second major surface remains substantially uncoated during said exposure of the substrate in the first plasma confinement.

14. The apparatus of claim 9 wherein the sputtering gas is converted to plasma in the second plasma confinement and bombards an outer surface of the electrode, thereby cleaning unwanted contamination from the outer surface of the electrode.

15. The apparatus of claim 1 wherein the rotatable electrode is cylindrical and is rotatable about its longitudinal axis.

16. The apparatus of claim 1 wherein the first and second magnet systems are stationary.

17. The apparatus of claim 1 wherein the first and second magnet systems are disposed in a generally-opposed configuration.

18. The apparatus of claim 1 wherein the first and second magnet systems each comprise an elongated magnetic array.

19. The apparatus of claim 1 wherein a substrate support is positioned in the substrate-coating region of the deposition chamber.

20. The apparatus of claim 19 wherein the substrate support is adapted to convey a series of spaced-apart sheet-like substrates.

21. The apparatus of claim 19 wherein the substrate-coating region of the chamber is at a higher elevation than the electrode-cleaning region of the chamber, and wherein the substrate support is adapted to retain a substrate above the rotatable electrode.

22. The apparatus of claim 21 wherein the substrate support comprises a series of spaced-apart transport rollers adapted to convey substrates above the rotatable electrode.

23. The apparatus of claim 19 wherein the substrate support defines a path of substrate travel a desired portion of which is adjacent the electrode.

24. The apparatus of claim 23 wherein the first magnet system is adapted to create a first plasma confinement about the desired portion of the path of substrate travel.

25. The apparatus of claim 23 wherein the first magnet system is adapted to create a first plasma confinement defining a magnetic trap that closes over a surface of a substrate on the desired portion of the path of substrate travel.

26. The apparatus of claim 24 wherein the first gaseous atmosphere comprises a precursor gas that is chemically reacted and/or decomposed in the first plasma confinement such that a substrate on the desired portion of the path of substrate travel is exposed to the chemically-reacting and/or decomposing precursor gas and is thereby coated.

27. The apparatus of claim 26 wherein the substrate has a first major surface oriented away from the rotatable electrode, and wherein the first major surface of the substrate is coated.

28. The apparatus of claim 27 wherein the substrate has a second major surface oriented toward the rotatable electrode, and the second major surface remains substantially uncoated during said exposure of the substrate in the first plasma confinement.

29. The apparatus of claim 1 wherein the rotatable electrode has an outer layer of low sputter rate material.

30. The apparatus of claim 29 wherein the electrode comprises a backing tube on which the outer layer of low sputter rate material is carried.

31. The apparatus of claim 30 wherein the low sputter rate material is carbon.

32. The apparatus of claim 1 further comprising a gas delivery system adapted for delivering a precursor gas to the substrate-coating region and a sputtering gas to the electrode-cleaning region.

33. The apparatus of claim 1 wherein a first vacuum pump is operably connected to the substrate-coating region and a second vacuum pump is operably connected to the electrode-cleaning region.

34. The apparatus of claim 1 wherein the deposition chamber is adapted for separate gas delivery and vacuum pumping of the substrate-coating region and the electrode-cleaning region.

35. The apparatus of claim 1 wherein the deposition chamber includes a divider between the substrate-coating region and the electrode-cleaning region.

36. The apparatus of claim 35 wherein the divider comprises two spaced-apart walls bounding an intermediate atmosphere.

37. The apparatus of claim 36 further comprising a vacuum pump in communication with the intermediate atmosphere.

38. A method for depositing films onto substrates, the method comprising:

a) providing a film-deposition apparatus comprising a deposition chamber having a substrate-coating region and an electrode-cleaning region, a rotatable electrode positioned in the deposition chamber and having an interior cavity, and first and second magnet systems disposed in said interior cavity;

b) establishing in the substrate-coating region a first gaseous atmosphere comprising a precursor gas;

c) establishing in the electrode-cleaning region a second gaseous atmosphere comprising a sputtering gas;

d) delivering a charge to the electrode, thereby creating in the first gaseous atmosphere plasma that is held by the first magnet system in a first plasma confinement and creating in the second gaseous atmosphere plasma that is held by the second magnet system in a second plasma confinement, the precursor gas being chemically reacted and/or decomposed in the first plasma confinement; and

e) positioning a substrate in the substrate-coating region and exposing the substrate to the chemically-reacting and/or decomposing precursor gas in the first plasma confinement such that coating is formed on the substrate.

39. The method of claim 38 wherein the substrate positioned in the substrate-coating region has a first major surface oriented away from the rotatable electrode, and wherein said coating is formed on the first major surface of the substrate.

40. The method of claim 39 wherein the substrate has a second major surface oriented toward the rotatable electrode, and the second major surface remains substantially uncoated during said exposure of the substrate in the first plasma confinement.

41. The method of claim 38 comprising conveying a series of spaced-apart substrates through the substrate-coating region and exposing the substrates to the chemically-reacting and/or decomposing precursor gas such that coatings are formed on the substrates.

42. The method of claim 38 wherein the electrode is exposed to the second gaseous atmosphere such that plasma in the second plasma confinement bombards an outer surface of the electrode, thereby cleaning unwanted contamination from the outer surface of the electrode.

43. The method of claim 42 wherein the electrode is rotated continuously during film deposition, and wherein unwanted contamination is cleaned continuously from the outer surface of the electrode.

44. The method of claim 38 wherein the electrode is cylindrical and is rotated about its longitudinal axis.

45. The method of claim 38 wherein the substrate is positioned in the substrate-coating region and exposed to the chemically-reacting and/or decomposing precursor gas by conveying the substrate along a substrate support that defines a path of substrate travel a desired portion of which is adjacent the electrode and is in the first plasma confinement.

46. The method of claim 45 wherein the substrate is a glass sheet, the substrate support comprises a series of spaced-apart transport rollers, and the glass sheet is conveyed over the rollers.